Pflügers Archiv

European Journal of Physiology

Vol. 387 1980

Field Editors

P.-O. Åstrand, Stockholm · T. Brismar, Stockholm
E. E. Carmeliet, Leuven · R. Casteels, Leuven
J. Crabbé, Bruxelles · C. de Rouffignac, Gif-sur-Yvette
J. Durand, Paris · W. Hasselbach, Heidelberg
H. Hensel, Marburg · K. Hierholzer, Berlin
W. D. Keidel, Erlangen · N. A. Lassen, København
H. H. Loeschcke, Bochum · S. Mellander, Lund
H. Meves, Homburg (Saar) · R. B. Moreton, Cambridge
H. Murer, Fribourg · A. Nizet, Liège
M. I. M. Noble, Midhurst · O. H. Petersen, Dundee
W. Precht, Zürich · H. Seller, Heidelberg
E. Simon, Bad Nauheim · L. Tauc, Gif-sur-Yvette
G. Thews, Mainz · K. Thurau, München
W. Trautwein, Homburg (Saar)
K. J. Ullrich, Frankfurt (Main) · E. Wetterer, Erlangen
M. Wiesendanger, Fribourg · J. Zachar, Bratislava
W. G. Zijlstra, Groningen

Subject Editors

E. Gerlach, München · P. Deetjen, Innsbruck
O. Pompeiano, Pisa

Coordinating Editor

F. Kreuzer, Nijmegen

Springer International

Pflügers Archiv · European Journal of Physiology

Founded in 1868 as „Pflügers Archiv für die gesamte Physiologie des Menschen und der Tiere" by *E. F. W. Pflüger*. Edited by *M. Verworn, E. Abderhalden, A. Bethe, R. Höber, A. v. Muralt, H. Rein* et al.

Published: Vol. 1–29 (1876) Bonn, Cohen und Sohn; Vol. 30–92 (1901) Bonn, E. Strauß; Vol. 93–170 (1917) Bonn, M. Hager; since Vol. 171 (1918) Berlin, Springer.

Since 1920 Pflügers Archiv has included: „Archiv für Physiologie" (Archiv für Anatomie und Physiologie, Physiologische Abteilung). Founded and edited by Johannes Müller, E. du Bois-Reymond, W. v. Waldeyer-Hartz et al. 1877–1914. Leipzig, Veit und Co., since 1915, Berlin, Vereinigung Wissenschaftlicher Verleger, afterwards Walter de Gruyter.

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is transferred to the publisher.

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Authors of this journal can benefit from library and photocopy fees collected by VG WORT if certain conditions are met. If an author lives in the Federal Republic of Germany or in West Berlin it is recommended that he contacts Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestrasse 49, D-8000 München 2, Federal Republic of Germany, for detailed information.

Die in der Zeitschrift veröffentlichten Beiträge sind urheberrechtlich geschützt. Alle Rechte, insbesondere das der Übersetzung in fremde Sprachen, vorbehalten. Kein Teil dieser Zeitschrift darf ohne schriftliche Genehmigung des Verlages in irgendeiner Form – durch Fotokopie, Mikrofilm oder andere Verfahren – reproduziert oder in eine von Maschinen, insbesondere von Datenverarbeitungsanlagen, verwendbare Sprache übertragen werden.

Auch die Rechte der Wiedergabe durch Vortrag, Funk- und Fernsehsendung, im Magnettonverfahren oder ähnlichem Wege bleiben vorbehalten.

Fotokopien für den persönlichen und sonstigen eigenen Gebrauch dürfen nur von einzelnen Beiträgen oder Teilen daraus als Einzelkopien hergestellt werden. Jede im Bereich eines gewerblichen Unternehmens hergestellte oder benützte Kopie dient gewerblichen Zwecken gem. § 54 (2) UrhG und verpflichtet zur Gebührenzahlung an die VG WORT, Abteilung Wissenschaft, Goethestrasse 49, D-8000 München 2, von der die einzelnen Zahlungsmodalitäten zu erfragen sind.

Autoren dieser Zeitschrift können unter gewissen Voraussetzungen in die Individualausschüttung von Mitteln aus der Bibliothektantieme und dem Fotokopieraufkommen mit einbezogen werden. Genaue Informationen erteilt die Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestrasse 49, D-8000 München 2.

Die Wiedergabe von Gebrauchsnamen, Handelsnamen, Warenbezeichnungen usw. in dieser Zeitschrift berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, daß solche Namen im Sinne der Warenzeichen- und Markenschutz-Gesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften.

Springer-Verlag Berlin Heidelberg New York

Printers: Wiesbadener Graphische Betriebe GmbH, Wiesbaden

Printed in Germany – © by Springer-Verlag Berlin Heidelberg 1980

Contents

Åblad, B., see Kopp, U., et al. 107

Andrews, P. L. R., Fussey, I. V., Scratcherd, T.
The Spontaneous Discharge in Abdominal Vagal Efferents in the Dog and Ferret 55

Aurell, M., see Kopp, U., et al. 107

Benedek, G., see Obál, F., Jr., et al. 183

Benhamou, J.-P., see Lebrec, D., et al. 67

Betz, E., see Knehr, H. E., et al. 73

Caflisch, C. R., see Gennari, F. J., et al. 69

Carmeliet, E. Ramon, J.
Electrophysiological Effects of Acetylcholine in Sheep Cardiac Purkinje Fibers 197

Carmeliet, E., Ramon, J.
Effect of Acetylcholine on Time-Independent Currents in Sheep Cardiac Purkinje Fibers 207

Carmeliet, E., Ramon, J.
Effects of Acetylcholine on Time-Dependent Currents in Sheep Cardiac Purkinje Fibers 217

Casteels, R., Suzuki, H.
The Effect of Histamine on the Smooth Muscle Cells of the Ear Artery of the Rabbit 17

Cassidy, P., Hoar, P. E., Kerrick, W. G. L.
Inhibition of Ca^{2+}-Activated Tension and Myosin Light Chain Phosphorylation in Skinned Smooth Muscle Strips by the Phenothiazines 115

Cotelli, F., see Schettino, T., et al. 269

Cremaschi, D., see Schettino, T., et al. 269

Deutsch, H., Simon, E.
Intracerebroventricular Osmosensitivity in the Pekin Duck. Properties and Functions in Salt and Water Balance 1

Deutsch, H., see Simon-Oppermann, Ch., et al. 99

DiFrancesco, D., Noma, A., Trautwein, W.
Separation of Current Induced by Potassium Accumulation from Acetylcholine-Induced Relaxation Current in the Rabbit S-A Node 83

Dudel, J., Finger, W.
Closing of Membrane Channels Effected by γ-Amino-Butyric Acid (GABA) in Crayfish Muscle 153

Dudel, J., Finger, W., Stettmeier, H.
Inhibitory Synaptic Channels Activated by γ-Aminobutyric Acid (GABA) in Crayfish Muscle 143

Finger, W., see Dudel, J., et al. 143

Finger, W., see Dudel, J. 153

Finger, W., Stettmeier, H.
Efficacy of the Two-Microelectrode Voltage Clamp Technique in Crayfish Muscle 133

Fussey, I. V., see Andrews, P. L. R., et al. 55

Gennari, F. J., Johns, C., Caflisch, C. R.
Effect of Benzolamide on pH in the Proximal Tubules and Peritubular Capillaries of the Rat Kidney 69

Griffiths, P. J., Güth, K., Kuhn, H. J., Rüegg, J. C.
ATPase Activity in Rapidly Activated Skinned Muscle Fibres 167

Güth, K., see Griffiths, P. J., et al. 167

Hagemann, H., see Hirche, H., et al. 231

Hartung, K., Stieve, H.
The Effect of Sodium Ions on the Light-Induced ^{86}Rb Release from the Isolated Crayfish Retina 225

Heinle, H., see Knehr, H. E., et al. 73

Helber, R.
Elastic and Inelastic Behaviour of Resting Frog Muscle Fibres 261

Hirche, H., Schumacher, E., Hagemann, H.
Extracellular K^+ Concentration and K^+ Balance of the Gastrocnemius Muscle of the Dog During Exercise **231**

Hoar, P. E., see Cassidy, P., et al. 115

Jamison, R. L., see Poujeol, P., et al. 27

Jancsó-Gábor, A., see Obál, F., Jr., et al. 183

Johns, C., see Gennari, F. J., et al. 69

Kerrick, W. G. L., see Cassidy, P., et al. 115

Kirsch, K. A., Merke, J., Rambo, N., Wicke, H. J.
Tissue Compliance in Superficial Tissues Along Body Axis in Man 239

Klöss, S., see Ullrich, K. J., et al. 127

Knehr, H. E., Heinle, H., Betz, E.
Enhanced Oxygen Uptake and Lactate Production of Smooth Muscle 73

Koop, U., Aurell, M., Nilsson, I.-M., Åblad, B.
The Role of Beta-1-Adrenoceptors in the Renin Release Response to Graded Renal Sympathetic Nerve Stimulation 107

Kreutzberg, G. W., see Schrader, J., et al. 245

Krolicki, L., Leniger-Follert, E.
Oxygen Supply of the Brain Cortex (Rat) During Severe Hypoglycemia 121

Kuhn, H. J., see Griffiths, P. J., et al. 167

Kuschinsky, W., see Schrader, J., et al. 245

Lacroix, S., see Lebrec, D., et al. 67

Lamina-Donin, C. L., see Schettino, T., et al. 269

Lebrec, D., Lacroix, S., Benhamou, J.-P.
Hepatic Vein Catheterization in the Rat 67

Lee, W. M., see Wong, P. Y. D., et al. 61

Lippe, C., see Schettino, T., et al. 269

LaRochelle, F. T., Jr., North, W. G., Stern, P.
A New Extraction of Arginine Vasopressin from Blood. The Use of Octadecasilyl-Silica 79

Leniger-Follert, E., see Krolicki, L. 121

Lutz, J., Metzenauer, P.
Effects of Potential Blood Substitutes (Perfluorochemicals) on Rat Liver and Spleen 175

Merke, J., see Kirsch, K. A., et al. 239

Metzenauer, P., see Lutz, J. 175

Möhring, J., Schoun, J., Simon-Oppermann, Ch., Simon, E.
Radioimmunoassay for Arginine-Vasotocin (AVT) in Serum of Pekin Ducks. AVT Concentrations After Adaptation to Fresh Water and Salt Water 91

Möhring, J., see Simon-Oppermann, Ch., et al. 99

Moore, L. C., Yarimizu, S., Schubert, G., Weber, P. C., Schnermann, J.
Dynamics of Tubuloglomerular Feedback Adaption to Acute and Chronic Changes in Body Fluid Volume 39

Neumcke, B., Schwarz, W., Stämpfli, R.
Differences Between K Channels in Motor and Sensory Nerve Fibres of the Frog as Revealed by Fluctuation Analysis 9

Nilsson, I.-M., see Kopp, U., et al. 107

Noma, A., see DiFrancesco, D., et al. 83

North, W. G., see LaRochelle, F. T., Jr., et al. 79

Novotová, M., see Uhrík, B., et al. 281

Obál, F., Jr., Benedek, G., Jancsó-Gábor, A., Obál, F.
Tail Skin Vasodilatation and Bath Test in Capsaicin-Desensitized Rats 183

Obál, F., see Obál, F., Jr., et al. 183

Öberg, B., see Wennergren, G. 189

Petrofsky, J. S., Weber, C., Phillips, Ch. A.
Mechanical and Electrical Correlates of Isometric Muscle Fatigue in Skeletal Muscle in the Cat 33

Phillips, Ch. A., see Petrofsky, J. S., et al. 33

Pleschka, K., see Thomson, E. M. 161

Poujeol, P., Jamison, R. L., Rouffignac, C. de
Phosphate Reabsorption in Juxtamedullary Nephron Terminal Segments 27

Rambo, N., see Kirsch, K. A., et al. 239

Ramon, J., see Carmeliet, E. 197; 207; 217

Rouffignac, C., de, see Poujeol, P., et al. 27

Rüegg, J. C., see Griffiths, P. J., et al. 167

Rumrich, G., see Ullrich, K. J., et al. 127

Schettino, T., Cremaschi, D., Lippe, C., Lamina-Donin, C. L., Cotelli, F.
Nonelectrolyte Fluxes Across Gastric Mucosa in Relation to Gastric Stimulation. Is Gastric Juice Secreted by Osmosis or Exocytosis? 269

Schmidtmayer, J., Ulbricht, W.
Interaction of Lidocaine and Benzocaine in Blocking Sodium Channels 47

Schnermann, J., see Moore, L. C., et al. 39

Schoun, J., see Möhring, J., et al. 91

Schoun, J., see Simon-Oppermann, Ch., et al. 99

Schrader, J., Wahl, M., Kuschinsky, W., Kreutzberg, G. W.
Increase of Adenosine Content in Cerebral Cortex of the Cat During Bicuculline-Induced Seizure 245

Schubert, G., see Moore, L. C., et al. 39

Schumacher, E., see Hirche, H., et al. 231

Schwarz, W., see Neumcke, B., et al. 9

Scratcherd, T., see Andrews, P. L. R., et al. 55

Silbernagl, S., see Völkl, H. 253

Simon, E., see Deutsch, H. 1

Simon, E., see Möhring, J., et al 91

Simon, E., see Simon-Oppermann, Ch., et al. 99

Simon-Oppermann, Ch., see Möhring, J., et al. 91

Simon-Oppermann, Ch., Simon, E., Deutsch, H., Möhring, J., Schoun, J.
Serum Arginine-Vasotocin (AVT) and Afferent and Central Control of Osmoregulation in Conscious Pekin Ducks 99

Stämpfli, R., see Neumcke, B., et al. 9

Stern, P., see LaRochelle, F. T., Jr., et al. 79

Stettmeier, H., see Dudel, J., et al. 143

Stettmeier, H., see Finger, W. 133

Stieve, H., see Hartung, K. 225

Suzuki, H., see Casteels, R. 17

Thomson, E. M., Pleschka, K.
Vasodilatory Mechanisms in the Tongue and Nose of the Dog under Heat Load 161

Trautwein, W., see DiFrancesco, D., et al. 83

Tsang, A. Y. F., see Wong, P. Y. D., et al. 61

Uhrík, B., Novotová, M., Zachar, J.
A Quantitative Estimation of Components in Crayfish Muscle Fibres by Stereological Methods 281

Ulbricht, W., see Schmidtmayer, J. 47

Ullrich, K. J., Rumrich, G., Klöss, S.
Bidirectional Active Transport of Thiosulfate in the Proximal Convolution of the Rat Kidney 127

Völkl, H., Silbernagl, S.
Molecular Specificity of Tubular Reabsorption of L-Proline. A Microperfusion Study in Rat Kidney 253

Wahl, M., see Schrader, J., et al. 245

Weber, C., see Petrofsky, J. S., et al. 33

Weber, P. C., see Moore, L. C., et al. 39

Wennergren, G., Öberg, B.
Cardiovascular Effects Elicited from the Ventral Surface of Medulla Oblongata in the Cat 189

Wicke, H. J., see Kirsch, K. A., et al. 239

Wong, P. Y. D., Tsang, A. Y. F., Lee, W. M.
Effect of Intraluminal Ion Concentrations on the Secretion of the Rat Cauda Epididymidis in vivo 61

Yarimizu, S., see Moore, L. C., et al. 39

Zachar, J., see Uhrík, B., et al. 281

Indexed in Current Contents

Subject Index

A

Abdominal vagal efferents 55–60
Acetylcholine 197–205, 207–216, 217–223
– -induced relaxation current 83–90
Action potential 197–205
Active vasodilatation 161–166
Adenosine content in cerebral cortex 245–251
Adrenergic and cholinergic receptors 161–166
Angiotensin II 1–7
Arginine vasopressin 79–82
– vasotocin 91–97
– – (AVT) 99–106
Antidiuretic principle in birds 91–97
Atheroma 73–77
ATP 115–120
ATPase activity in rapidly activated skinned muscle fibres 167–173
Atropine 197–205
Avian ADH 99–106
– osmoregulation 1–7, 91–97

B

Background current 207–216
Baroreceptors 189–196
Behavioural thermoregulation 183–188
Benzocaine 47–54
Benzolamide 69–72
Beta-1-adrenoreceptors 107–113
Bicuculline-induced seizure 245–251
Bidirectional active transport of thiosulfate 127–132
Block of Na channels 47–54
Blood flow resistance 189–196
– – tongue and nose 161–166
– substitutes (Perfluorochemicals) 175–181
Body fluid volume 39–45
– temperature regulation 183–188
Brain cortex 121–126

C

Ca store, cellular 17–25
Ca^{2+} 61–66
– -activated tension 115–120
– -free EGTA 61–66
Calmodulin 115–120
Capsaicin 183–188
Carbachol 1–7
Carbon clearance 175–181
Carbonic anhydrase inhibition 69–72
Cardiac Purkinje fibers 197–205, 207–216, 217–223
Carotid arteries 73–77
Catheterization 67–68
Cauda epididymidis 61–66
Cellular Ca store 17–25
Cerebral blood-flow 245–251
– osmoregulation 1–7
– osmosensitivity 99–106
Chemoreceptors 189–196
Chemosensitive zones 189–196
Chloride channels 153–160
Chloropromazine 115–120
Colchinine 269–279
Coli endotoxin 175–181
Crayfish muscle fibres 281–286
– retina 225–229
Currents, time-dependent 217–223
–, –-independent 207–216

D

Diastolic depolarization 197–205
dl-Propranolol 107–113
DOCA-salt treatment 39–45
Dynamic young's modulus 261–268

E

Ear artery of the rabbit 17–25
Elastic and inelastic behaviour 261–268
Electrocorticogram 121–126
Electrogenic pumps 207–216
Epididymis, secretion of organic compounds 61–66
Exercise 33–38
– induced changes of the extracellular K^+ concentrations 231–237
Excitation-contraction-coupling 17–25
Exocytosis 269–279
Extracellular H^+ activity of skeletal muscle 231–237
– K^+ concentration 231–237
– volume 39–45

F

Fast and slow muscle 33–38
Fatigue, muscle 33–38
Fluctuation analysis 9–16

G

GABA 189–196
– in crayfish muscle 153–160
Gamma-amino-butyric acid 153–160
– -Aminobutyric acid (GABA) 143–151
Gastric H^+-secretion 269–279
– juice 269–279
– stimulation 269–279
Glycerol extracted fibres 261–268
GFR regulation 39–45
Gravity 239–244

H

Heat load 161–166
– loss 183–188
Hepatic vein catheterization 67–68
H_1-H_2-receptors 17–25
Histamine 17–25, 269–279
Hyperemia, exercise 231–237
Hydrogen ion secretion 69–72
Hypothalamic temperature 99–106
Hypoglycemia 121–126
Hypoxanthine 245–251

I

Indocyanine green 175–181
Ileum 115–120
Impedance 133–141
Inhibitory synaptic channels 143–151
Inosine 245–251
Intraluminal ion concentrations 61–66
Intracerebroventricular microperfusion 99–106
– osmosensitivity 1–7
Ion-selective electrodes 231–237
Isometric contractions 33–38
– exercise 33–38
– tension 167–173

J

Juxtamedullary nephron terminal segments 17–31

K

K channel 9–16
Kidney 127–132
–, amino acid transport 253–259
–, phosphate reabsorption 27–31
–, proximal pH 69–72
–, tubuloglomerular feedback 39–45
K rectifier 207–216
K^+balance 231–237
K^+-efflux 225–229

L

Lactate 245–251
– production 73–77
Lidocaine 47–54
Light-induced ^{86}Rb release 225–229
Long-sacromere fibres of crayfish 281–286
Local tissue pO_2 121–126
Loop of Henle 17–31
L-Proline reabsorption 253–259

M

Meander model of muscle 261–268
Medulla oblongata 189–196
Membrane channels 153–160
– conductance 153–160
– current fluctuations 133–141
Metoprolol 107–113
Microinjection techniques 17–31
Microperfusion 253–259
Micropuncture 39–45
Microtubules 269–279
Miniature plethysmograph 239–244
Motor and sensory nerve fibres 9–16
– fibre 9–16
– unit action potentials 33–38
Muscarinic receptor 197–205

Muscle ATPase activity 167–173
– blood flow 231–237
– exercise 231–237
– fatigue 33–38
– fibres 133–141, 281–286
Myelinated nerve fibres 47–54
Myosin light chain kinase 115–120

N

Na^+ coupled transport 127–132
– ions 61–66
NADH breakdown 167–173
Nasal blood flow 161–166
Nephron terminal segments 17–31
Nerve fibres 9–16
– membrane 9–16
Neuronal damage occurring after severe hypoglycemia 121–126
Node of Ranvier 47–54
Noise analysis 133–141
– spectrum of the inhibitory chloride current 153–160
Nonelectrolyte fluxes across gastric mucosa 269–279
5'-Nucleotidase 245–251

O

Octadecasilyl-silica 79–82
Osmoregulation 99–106
Osmosis 269–279
Oxygen supply of the brain cortex 121–126
– uptake 73–77

P

Pacemaker activity 217–233
Paraaminohippurate transport 127–132
Perfluorochemicals 175–181
Peritubular capillaries 69–72
Perivascular nerves 17–25
Phenothiazines 115–120
Phentolamine 197–205
Phosphate reabsorption 17–31
Photoreceptor cells 225–229
Potassium accumulation 83–90
Promethazine 115–120
Propranolol 197–205
Proximal convolution 127–132
– tubules 69–72
– tubular pH 69–72
Pulmonary artery strips 115–120
Purkinje fibers 207–216, 217–223

R

Radioimmunoassay for arginine-vasotocin (AVT) 91–97
^{86}Rb release 225–229
Reabsorption of L-proline 253–259
Relaxation of acetylcholine-induced current 83–90
Renal acidification 69–72
– blood flow 107–113
– phosphate reabsorption 17–31
– sympathetic nerve stimulation 107–113
– tubule 127–132, 253–259
– tubuloglomerular feedback 39–45
– water excretion 1–7
Renin release 107–113
Resting tension 261–268
Reticuloendothelial system 175–181
Retina 225–229
Rostral brainstem cooling 99–106

S

Sacromere length 261–268
Salt gland secretion 1–7
Secretion, epididymis 61–66
Seizure 245–251
Sensory 9–16
– fibre 9–16
Short range elasticity 261–268
Single myelinated nerve fibres 47–54
Sinoatrial node 83–90
Skin vasodilatation 183–188
Skinned fibres 167–173
Skeletal muscle 33–38, 261–268
Smooth muscle 115–120
– – cells 17–25
– – cell proliferates 73–77
Sodium channels 47–54
– ions 225–229
Space clamp quality 133–141
Spontaneous discharge 55–60
Stereology 281–286
Succinylcholine 197–205
Sulfate transport 127–132
Surface membranes 281–286
Synaptic membrane channels 143–151
– transmission by GABA 143–151

T

Techniques 67–68
Temperature regulation 183–188
Tetanic tension 33–38
Thermoregulation 183–188
Thiosulfate transport 127–132
Time-dependent currents 217–223
– -independent currents 207–216
Tissue compliance 239–244
Tongue blood flow 161–166
Trifluoperazine 115–120
Tubular reabsorption of L-proline 253–259
Tubuloglomerular feedback adaption 39–45
Twitch tension 33–38

V

Vagal efferents 55–60, 99–106
Vascular smooth muscle 17–25
Vasodilatation 183–188
Vasodilatory mechanisms in the tongue and nose 161–166
Vasomotor neuron activity 189–196
Ventral medulla oblongata 189–196
Voltage clamp 207–216, 217–223
– – technique 133–141

W

Working muscle 231–237

Advice to Authors

The illustrations that will appear in your contribution will be shown to best advantage if you follow the brief set of instructions below. Please read carefully. Thank you.

The Publisher

Preparation of Line Drawings

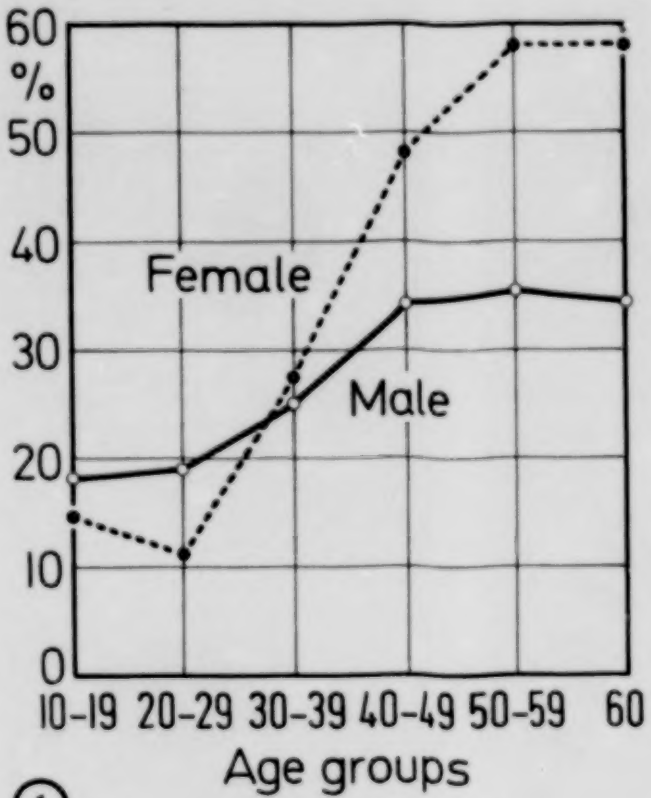
Illustration copy should be prepared to fit the format of the column or printed page (print area) so that 1:1 reproduction is possible. In case reduction is absolutely necessary, please state the alternative scale desired.
The publisher reserves the right to reduce or enlarge illustrations.

Drawings are to be twice the final size and executed in indelible black ink.

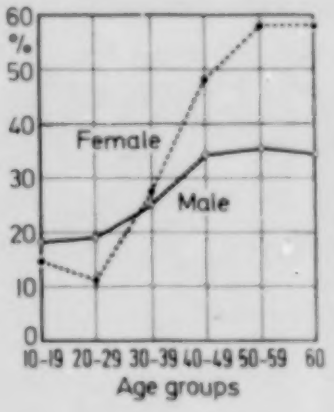
Important points to note: thickness of lines, size of inscriptions, size of measuring points, adequate spacing of shaded and dotted areas.

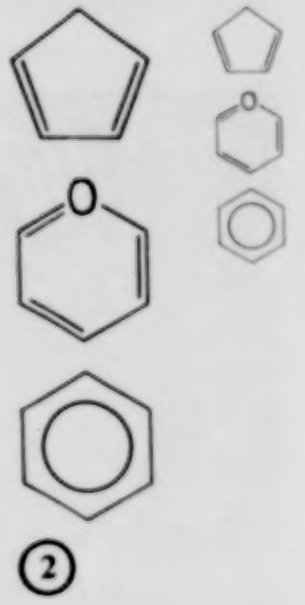
Words should be in upper- and lower-case characters, not capitals.

The following are optimal sizes as they finally appear in the journal:
Capital letters and numbers: 2 mm
Lower-case letters: 1.6 mm.



①

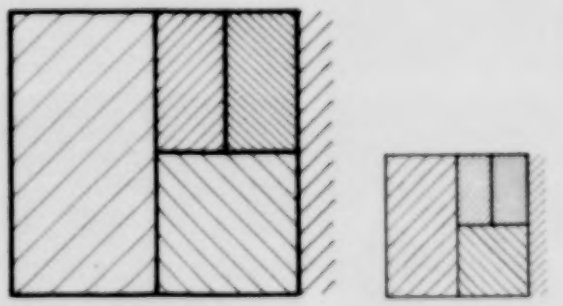




②

samples 1 to 5 show the original size and after 50% reduction

③



④

ABCDEFGHIJKLMNOPQRSTUVWXYZ
aabcdefghijklmnopqrstuvwxyz
1234567890 1·5° III IV VIII IX ∞ % ≈
[(=−+x÷ !?:" ",)] (A) (B) (a) (b)

⑤

ABCDEFGHIJKLMNOPQRSTUVWXYZ
aabcdefghijklmnopqrstuvwxyz
1234567890 1·5° III IV VIII IX ∞ % ≈
[(=−+x÷ !?:" ",)] (A) (B) (a) (b)

Selection of Illustration Material for Halftones (photographs, micrographs, X-rays, instrument traces etc.).

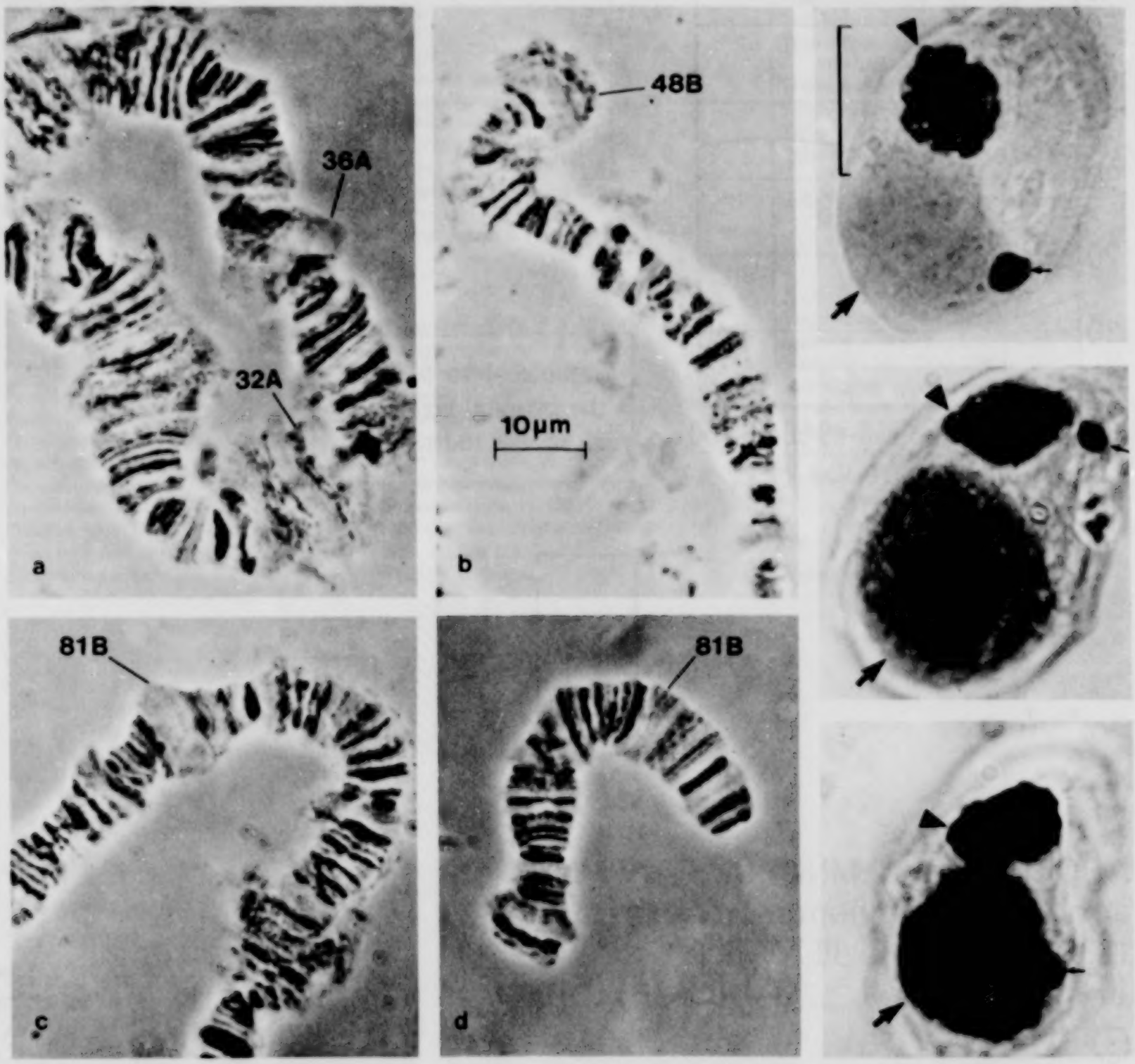
Photographs should be sharp, well-contrasted glossy prints of the original negative, trimmed at right angles. Halftone illustrations should be prepared to fit the format of the printed page (print area) so that 1:1 reproduction is possible. In case reduction is absolutely necessary, please state the alternative scale desired. The publisher reserves the right to reduce or enlarge illustrations.

Mark or crop marginal portions which are not required (at right angles, please).

Please see that illustrations which are to appear together are mounted accordingly as plates and that they correspond in size. Also they should not exceed the print area of the page, including room for the legend.

With X-rays, please indicate the significant parts on the back of the copy, or on an overlay.

Inscriptions, marks and scale lines should preferably be drawn neatly in black ink in an appropriate size on the face of the illustrations. Inscriptions should be about 3 mm high. Where Letraset is used, please handle it carefully and protect the photographs with an overlay.



Acta Neuropathologica
Aesthetic Plastic Surgery
Der Anaesthesist
Anatomia clinica
Anatomy and Embryology
Archiv für Psychiatrie und Nervenkrankheiten/Archives of Psychiatry and Neurological Sciences
Archives of Dermatological Research
Archives of Environmental Contamination and Toxicology
Archives of Gynecology
Archives of Orthopaedic and Traumatic Surgery/Archiv für orthopädische und Unfall-Chirurgie
Archives of Oto-Rhino-Laryngology/Archiv für Ohren-, Nasen- und Kehlkopfheilkunde
Archives of Toxicology/Archiv für Toxikologie
Berichte über die allgemeine und spezielle Pathologie/Pathology
Berichte über die gesamte Gynäkologie und Geburtshilfe sowie deren Grenzgebiete/Gynaecology - Obstetrics
Blood Cells
Blut
Bulletin of Environmental Contaminstion and Toxicology
Calcified Tissue International
Cancer Chemotherapy and Pharmacology
Cancer Immunology and Immunotherapy
CardioVascular and Interventional Radiology
Cell and Tissue Research
Der Chirurg
Chirurgia plastica
Diabetologia
European Journal of Applied Physiology and Occupational Physiology
European Journal of Clinical Pharmacology
European Journal of Nuclear Medicine
European Journal of Pediatrics
Experimental Brain Research
Gastrointestinal Radiology
v. Graefes Archiv für klinische und experimentelle Ophthalmologie/v. Graefe's Archive for Clinical and Experimental Ophthalmology
Der Gynäkologe
Der Hautarzt
Histochemistry
HNO
Human Genetics
Immunogenetics
Intensive Care Medicine
International Archives of Occupational and Environmental Health
International Orthopaedics
Der Internist
Journal of Cancer Research and Clinical Oncology
Journal of Comparative Physiology
The Journal of Membrane Biology
Journal of Neurology
Kidney International
Klinische Wochenschrift
Langenbecks Archiv für Chirurgie
Lung
Medical Microbiology and Immunology MMI
Medical Progress through Technology

Springer Journals keeping you in pace with science.

Springer journals are known and respected internationally for keeping professionals in science and in medicine, in research and in industry well-informed about the rapid progress in their fields. Decide for yourself by sending in one of the order coupons.

To: **The Head Librarian/The Library Committee**

From: _____

Department: _____

☐ I/we have studied the Springer Journal(s)

_____

☐ and recommend that the journal(s) be purchased for the Main/Department Library

☐ I/we would like to see the Springer Journals Catalog with information on subscriptions/back volumes/microform

☐ Please obtain sample copies on other related Springer Journals and/or latest index/sample copy including volume-index

_____

SUBSCRIPTION ORDER FORM

SPRINGER-VERLAG BERLIN HEIDELBERG NEW YORK

Please order through your bookseller:
or Springer-Verlag, P.O. Box 105 280, D-6900 Heidelberg,
(All countries except North America)
or (North America) Springer-Verlag New York Inc.,
175 Fifth Avenue, New York, NY 10010, USA
North America subscriptions are entered with prepayment only.

☐ Please enter my/our subscription to (please give title or ISSN)

_____

Full subscription information is given on inside front or back cover page

Name: _____

Address: _____

_____

Date/Signature: _____

☐ This is a new order ☐ This is a renewal order

Please send a sample copy and/or latest index/sample copy including volume-index (supply is limited):

_____

_____

_____

Please send information concerning

☐ back volumes ☐ microform editions ☐ journals catalog

B

To: **The Head Librarian/The Library Committee**

Postcard - Airmail

To the bookseller

Monatsschrift für Kinderheilkunde
Naunyn-Schmiedeberg's Archives of Pharmacology
Der Nervenarzt
Neuroradiology
Nouvelle Revue Française d'Hématologie
Der Orthopäde
Der Pathologe
Pediatric Cardiology
Pediatric Radiology
Pflügers Archiv
European Journal of Physiology
Praxis der Psychotherapie und Psychosomatik
Psychological Research
Psychopharmacology
Radiation and Environmental Biophysics
Der Radiologe
Radiologie, Journal de CEPUR
Research in Experimental Medicine/ Zeitschrift für die gesamte experimentelle Medizin einschließlich experimenteller Chirurgie
Rheumatology International
Skeletal Radiology
Social Psychiatry/Sozialpsychiatrie/ Psychiatrie Sociale
Springer Seminars in Immunopathology
Unfallheilkunde/Traumatology
Der Urologe, Ausgabe A + B
Urologic Radiology
Urological Research
Virchows Archiv A Pathological Anatomy and Histology
Virchows Archiv B Cell Pathology
World Journal of Surgery
Zeitschrift für Parasitenkunde/ Parasitology Research
Zeitschrift für Rechtsmedizin/ Journal of Legal Medicine
Zentralblatt für die gesamte Kinderheilkunde/Pediatrics
Zentralblatt für die gesamte Neurologie und Psychiatrie/Neurology - Psychiatry
Zentralblatt für die gesamte Ophthalmologie und ihre Grenzgebiete/ Ophthalmology
Zentralblatt für die gesamte Radiologie/Radiology
Zentralblatt für die gesamte Rechtsmedizin und ihre Grenzgebiete/ Legal Medicine
Zentralblatt für Hals-, Nasen- und Ohrenheilkunde, Plastische Chirurgie an Kopf und Hals/Oto-Rhino-Laryngology, Plastic Surgery of Head and Neck
Zentralblatt für Haut- und Geschlechtskrankheiten sowie deren Grenzgebiete/ Dermatology
Zentralblatt Gastroenterologie - Stoffwechsel - Endokrinologie/ Gastroenterology - Metabolism - Endocrinology
Zentralblatt Hämatologie und klinische Onkologie/Haematology - Clinical Oncology
Zentralblatt Immunologie - Transplantation/Immunology - Transplantation
Zentralblatt Kardiologie - Nephrologie/Cardiology - Nephrology
Zentralblatt Pneumonologie - Tuberkulose/Pneumonology - Tuberculosis
Zentralblatt praktische Innere Medizin und Grenzgebiete/Internal Medicine
Zentralorgan für die gesamte Chirurgie und ihre Grenzgebiete/Surgery

Y. C. FUNG

Biomechanics

Mechanical Properties of Living Tissues

1980. Approx. 290 figures. Approx. 400 pages.
Cloth DM 67,–; approx. US $ 39.60
ISBN 3-540-90472-7

Contents: Introduction. – The Meaning of the Constitutive Equation. – The Flow Properties of Blood. – Red Blood Cells and Their Deformability. – Rheology of Blood in Microvessels. – Bioviscoelastic Fluids. – Bioviscoelastic Solids. – The Mechanical Properties of Blood Vessels. – Skeletal Muscle. – Heart Muscle. – Smooth Muscle. – Bone and Cartilage.

Biomechanics is a new and rapidly developing discipline. A unified approach to it has, however, been hampered up to now by the dispersion of its materials throughout various journals.
Biomechanics is the first in a series of definitive textbooks in which the entire field is at last consolidated and treated as a whole. The author is an authority in the area with many years of teaching experience. In this book, he provides students and teachers with a systematic presentation based on clearly defined mathematical prerequisites. Included are examples of the application of biomechanical principles to physiology and medicine. The carefully selected illustrations and easy-to-understand introduction of qualitative concepts are supplemented by well-graded exercises, making this book an indispensable guide to biomechanics for students of bioengineering, physiology and mechanics.

5858/4/2h

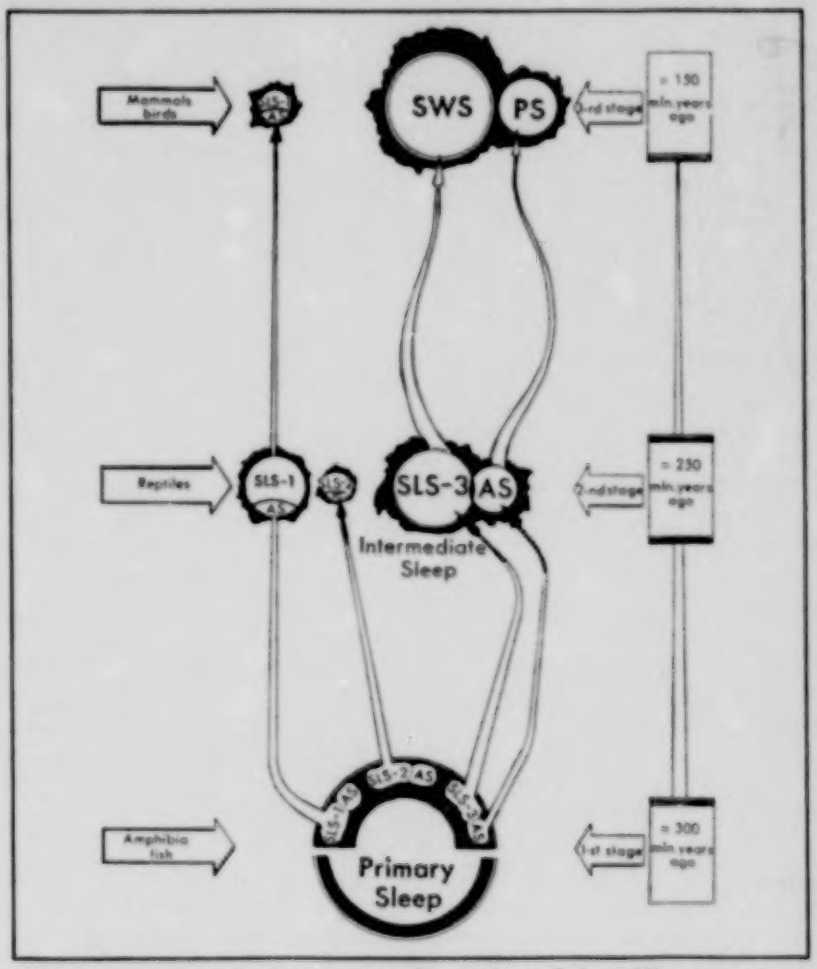
Springer-Verlag
Berlin
Heidelberg
New York

Biological Rhythms in Birds

Neural and Endocrine Aspects

Editors: Y. Tanabe, K. Tanaka, T. Ookawa

1980. IX, 373 pages.
Cloth DM 86,–; approx. US$ 50.60
Tokyo: Japan Scientific Societies Press
ISBN: 3-540-10311-2



The scheme of evolutionary transformation of sleep-like states in vertebrates.

Remarkable progress has been made in research on the neural and endocrine aspects of avian behavior and biological rhythms in recent years.
In this book, noted-authorities from Japan and other countries report on advances in the field in both original and survey papers. The reports are arranged into three categories: neural aspects of biological rhythms; endocrine aspects of biological rhythms; and the neural and endocrine control of behavior.

5869/4/2h

Springer-Verlag
Berlin
Heidelberg
New York

Pflügers Archiv

European Journal of Physiology

Contents of Volume 387 No. 3 September (II) 1980

Heart, circulation, respiration and blood; environmental and exercise physiology (A)

H. Hirche, E. Schumacher, H. Hagemann: Extracellular K^+ Concentration and K^+ Balance of the Gastrocnemius Muscle of the Dog During Exercise **231**

K. A. Kirsch, J. Merke, N. Rambo, H. J. Wicke: Tissue Compliance in Superficial Tissues Along Body Axis in Man **239**

J. Schrader, M. Wahl, W. Kuschinsky, G. W. Kreutzberg: Increase of Adenosine Content in Cerebral Cortex of the Cat During Bicuculline-Induced Seizure **245**

Transport processes, metabolism and endocrinology; kidney, gastrointestinal tract, and exocrine glands (B)

H. Völkl, S. Silbernagl: Molecular Specificity of Tubular Reabsorption of L-Proline. A Microperfusion Study in Rat Kidney **253**

T. Schettino, D. Cremaschi, C. Lippe, C. L. Lamina-Donin, F. Cotelli: Nonelectrolyte Fluxes Across Gastric Mucosa in Relation to Gastric Stimulation. Is Gastric Juice Secreted by Osmosis or Exocytosis? **269**

Excitable tissues and central nervous physiology (C)

E. Carmeliet, J. Ramon: Electrophysiological Effects of Acetylcholine in Sheep Cardiac Purkinje Fibers **197**

E. Carmeliet, J. Ramon: Effect of Acetylcholine on Time-Independent Currents in Sheep Cardiac Purkinje Fibers **207**

E. Carmeliet, J. Ramon: Effects of Acetylcholine on Time-Dependent Currents in Sheep Cardiac Purkinje Fibers **217**

K. Hartung, H. Stieve: The Effect of Sodium Ions on the Light-Induced ^{86}Rb Release from the Isolated Crayfish Retina **225**

R. Helber: Elastic and Inelastic Behaviour of Resting Frog Muscle Fibres **261**

B. Uhrík, M. Novotová, J. Zachar: A Quantitative Estimation of Components in Crayfish Muscle Fibres by Stereological Methods **281**

Indexed in Current Contents

Springer International